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INVENTION VS. INNOVATION: TECHNOLOGY AND THE FUTURE OF AGING

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The 2005 White House Conference on Aging (WHCOA) was a successful agenda-setting event for aging and technology. Presenting a technology pavilion for the first time, the WHCOA framed what many in the still nascent “gerontechnology” field have known: that the appropriate use of technology holds incredible power, promise and potential to address many of the demands of aging in the United States.

Information technology, in particular, offers new capacity to manage health and improve safety. On display were robots to monitor elders’ well-being, interactive devices to remind them to take their medicine, novel uses of everyday consumer electronics to connect older people to caregivers, and numerous systems to detect and alert others of their loved one’s safety and security. The WHCOA is designed to set the agenda on aging for the next decade, and clearly technology will be a part of that agenda and the lives of older people. However, before the field of aging becomes lost in the whirl of countless solutions in search of a problem, I believe that this is a critical time to take a policy pause and ask what was not shown at the conference—and what we want from technology.

LOW MARKET INNOVATION

The global aging and technology marketplace is high on invention but low on innovation. Innovation—putting ideas into practical use—requires technological invention, but also calls for the creation of a compelling, comprehensive vision of a better future, a sustainable economic model and the acknowledgement that with all new ideas come new problems.

Just as the personal computer alone did not create the magic of the Internet, the availability of many devices and related applications does not constitute the full potential of researchers in universities, government laboratories and businesses to transform the lives of older people and caregivers. The United States stands before the confluence of demands from a new generation of older Americans and the availability of advanced technology. Together, these elements present the potential to age differently and better.

Although we are seeing an explosion in new technology, American society is working with an old definition of aging. Definitions do more than describe—they establish both what is important and the acceptable range of alternatives. Technologists can be powerful agents of change, providing tools for new ways to live. However, the current definition of aging limits the power of technology. In particular, even though illness and disability affect older adults disproportionately, and are an important target of innovation, they should not be the only focus.

A new vision of a vibrant and productive aging population must be presented to technology researchers, corporations and policymakers—a compelling image of how we might work, play, move, learn, care, find meaning and do all those things that are critical to quality living, not just to healthy aging. Failure to articulate multiple dimensions of longevity risks a national failure to define a complete set of requirements under which technologists can invent new ways to engage and empower older adults as lifelong contributors to society.

Innovation is about where we want to be and how to get there, not simply managing where we are today. Many look to the disruptive demographics of the aging boomers to change the look of old age. However, American society cannot wait for the largest generation to gray before creatively exploiting technology. Technology in service to longevity must become prominent on the public agenda with a commanding sense of urgency and investment today if we are to see real innovations for tomorrow. Even the fast-paced world of technology takes time—current innovations in our homes, in our cars and in our pockets are based on foundations laid by research years ago.

SHOW ME THE MARKET

No matter how complete or compelling a vision may be, it must include practical economics. Real innovation rests on a sustainable business model that finances research, develops new products and facilitates broad rates of technology adoption that will lead to improved quality and reduced costs. The interstate highway system, for example, comprising more than 47,000 miles of pavement, is a complex system of technology and market incentives, along with taxes that finance its operation and maintenance. A similar public-private approach to financing and sustaining innovations in aging is absent today.

The widely held perception that the market for aging services is all about government programs limits the entry of many firms. Although many companies say they are eyeing the aging market, few of the companies that are recognized as high design, high service or high fun have invested in high tech for old age. As a result, most technology products and services for older people are developed by firms or units of larger firms that are accustomed to markets defined and limited by government requirements and reimbursement, especially Medicare and Medicaid.

Given the Government Accountability Office's outlook on public debt and spending, the government's solo capacity to subsidize an emerging industry is unlikely to be attractive to firms not already in the market. Just as the real demographic demand becomes the most urgent in history, continued reliance on government financing alone will reduce the attractiveness of the market for new industry players to invest in research, development and commercialization. Moreover, without a larger consumer market for new technologies, prices will remain artificially high and not follow the pattern of better, faster and cheaper found in computers and consumer electronics.

New market space will be created by identifying the older population's wants as well as needs. The aging community has the opportunity today to work with government and industry to develop new ideas that creatively tap new revenue sources, including discretionary income, adult children, employers, employers of adult children and annuities, to name a few. These innovations will surely include health, but will also include other services for which people are more accustomed to paying, such as transportation, home maintenance or leisure.

A BRAVE NEW WORLD

New solutions bring new problems. Ironically, older adults will be the first to test the acceptability of being electronically monitored, motivated and managed 24/7/365. As adult children, technologists, aging services providers and health professionals, we are demanding that older adults become the lead adopters of a brave new high-tech lifestyle.

The availability and affordability of computing power, sensors and related information technology has led many to promote remote monitoring and management of older people in their homes. Services exist today to detect when you wake, go to the bathroom, make a cup of coffee or deviate from your "normal" day's activities. Your movement can be tracked within a few meters of accuracy virtually anywhere on the planet. Your favorite shirt may now give you a checkup-a-day while your medicine cabinet records that you neglected to take your blood pressure medication. Even your increasingly intelligent toilet will transform the most basic of activities into an opportunity to measure and report your weight, glucose and diet to your physician. These and other functions are designed to proactively detect decline, manage chronic disease and ensure overall safety.

Although the potential benefits of these technology applications are many, the important question of privacy remains. How we can maintain independent lives while preserving our health and safety as we age is the essential tension in introducing and financing many of these innovations. Who decides? How is the data managed, to whom is it reported—and under what conditions? These are just a few of the questions raised by existing and emerging technologies in some homes today and in nearly all our lives tomorrow.

Technology offers the potential to make what we do better, faster and cheaper. However, when used to its full potential, it can transform what we do, invite new players and change our lives. Writer and visionary Arthur C. Clarke, author of *2001: A Space Odyssey* and *2010*, observed, "Any sufficiently advanced technology is indistinguishable from magic." Now is the time to ask: If the aging community

and policymakers had magical powers at their disposal to transform the future of aging (and they do today)—what would that future be? ❖

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